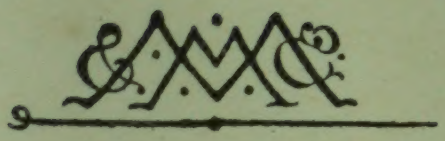
FAMILIAR INDIAN INSECTS



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FAMILIAR INDIAN INSECTS

BY

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PREFACE

ONLY relatively large species of insects are suitable for illustration on a picture of the size and type of "Familiar Indian Insects," so that in this handbook the consideration of certain groups, such as the two-winged flies, has had to be omitted.

The groups of Insects dealt with are arranged according to the order in which they appear in Professor H. Maxwell-Lefroy's *Indian Insect Life*, as all the volumes dealing with insects in the *Fauna of British India* are not yet issued; but within the groups the order of species given in the *Fauna* has been followed as far as possible.

F. FINN.

LONDON, 1920.

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FAMILIAR INDIAN INSECTS

INSECTS, when adult, may be distinguished from the other small animals often mistaken for them by having a pair of flexible horns called "feelers" or "antennæ" on the head, and only six legs. Centipedes have these feelers but many more legs; spiders and scorpions have eight legs and no feelers. None of these have wings, while insects, when adult, generally have at least one pair, and more often two pairs. The antennæ are the smelling-organs of insects.

Insects generally lay eggs; the young one produced either much resembles the parent except for having no wings; or it is a "larva" or worm-like creature, which, before it becomes adult, passes through a sleeping, inactive stage, in which it is hard-skinned and helpless, and is called a "pupa" or chrysalis. This is often enclosed in a case called a cocoon, made by the larva before it changes into the pupa stage.

ORTHOPTERA

The Orthoptera, or straight-winged insects, have the mouth parts formed for biting, and the young resembling their parents, except for the absence of wings.

When the wings come, at the last change of skin, the front pair are leathery but not hard, the hind pair clear and thin.

COCKROACH. (Insects, 36.)

This well-known household pest, noticeable for its flat body and long feelers, is found all over India, feeding on human food of all kinds, and living in houses. It is usually active at night, and often flies about before rain. It leaves a most unpleasant smell wherever it has been, and its enemies, which are spiders, gecko lizards, and the musk-shrew, should be encouraged. Its eggs are laid in a case of oblong shape.

ORCHID MANTIS. (Insects, 44.)

The Mantis somewhat resembles the cockroach in general form, but has the thorax, or centre part of the body to which the legs and wings are attached, lengthened out, and the front pair of legs armed with strong, sharp spines. The Mantis feeds on other insects, and when waiting for prey sits with the forepart raised and the front legs also raised and folded, till the victim comes near

and can be seized between their spiny joints with a sudden clutch.

In the Orchid Mantis the front part of the body is coloured pale purple, and resembles a flower, which may help to decoy insects.

LEAF-INSECT. (Insects, 55.)

This creature is often called the walking leaf. It lives in Assam, on the leaves of jungle trees, and feeds on them. The eggs are dropped on the ground, and are like seeds. The insect in the picture is the female, which has no hind wings; in the male the front wings are small, and the hind wings large and clear.

GIANT STICK-INSECT. (Insects, 17.)

This belongs to the same family as the Leaf-Insect, and has similar habits and eggs. Both trust to their resemblance to parts of plants to escape enemies, as their movements are slow.

MIGRATORY LOCUST. (Insects, 59.)

The Locust is simply a large kind of grasshopper, and has the hind legs very large and suited for jumping like the common little grasshopper's. It assembles in huge swarms, looking like clouds when on the wing, which devour all leaves and crops wherever they go. Then they seek a sandy district, and lay their eggs in the ground. The wingless young, which are called "hoppers," are

black, and go hopping along in crowds, devouring the plants in their way. The Migratory Locust is the best known, and is called the North-west Locust, as in India it only invades the north-west. The common Bombay Locust, when it assumes the pink colour and travels in swarms, is very like the Migratory Locust; but its young are green instead of blackish. Locusts are used as food by many people in India.

IMPERIAL LONG-HORNED GRASSHOPPER. (Insects, 53.)

The Long-horned Grasshopper lives alone on trees or shrubs, and is not destructive. The female has two projecting blades at the end of the body, usually kept closed, by means of which she deposits her eggs.

BHERWA CRICKET. (Insects, 54.)

This large cricket is found here and there from Sind to Assam. It is noticeable for its large jaws and the curled ends of its front wings, and burrows in sandy ground, where it seems to feed on other earth insects. When common it sometimes damages crops by cutting through their roots when burrowing.

NEUROPTERA

Dragon-flies belong to a group of their own, the Neuroptera. Their four wings are all large and clear. The mouth

is formed for biting, and the larva, though not grub-like, is rather different from the adult in appearance, besides being wingless. It lives in water, though the old ones only go there to lay their eggs on water-plants. Both larval dragon-flies and adults live on other small creatures, and the adults are most useful insect destroyers; they seize their prey when on the wing with their feet.

GIANT PLAIN-FRONTED DRAGON-FLY.
(Insects, 5.)

This Dragon-fly has been selected for illustration because of its large size. The large powerful dragon-flies rest with their wings expanded as in flight, and are very strong flyers. The slender small kinds close their wings in repose and fly weakly.

HYMENOPTERA

The Hymenoptera or Stinging Insects have the mouth parts formed for biting and licking, and the females are commonly provided with a sting at the end of the body; this is connected with a poison bag, and injects poison like the fang of a venomous snake. Except in the females of some, there are four wings, of rather small size.

In those which live in society there are castes; the workers, which are barren wingless females, which do the work and fighting, and the stingless males and royal females, which are the breeders and the parents of all; this

caste is of larger bodily size than the workers. These habits have long been well known in the common tame bee.

The larvae of the stinging insects are white helpless grubs, much like the maggots of the common two-winged flies; the pupa is like the full-grown insect, but white, and lies with the limbs folded as if asleep. The grubs are provided with food by their parents, like the young of some birds; and like such birds, the stinging insects show great skill in making nests.

COMMON MASON WASP'S NEST.
(Insects, 2.)

The Common Mason Wasp is about an inch long, has a very slender waist, and is black, marked with yellow on the waist and limbs. It makes cells of mud in any suitable shelter, in which it lays its eggs separately. In each cell it places some spiders, which it has caught and stung in such a way that they are paralysed but not killed, and remain a helpless prey to the grub. In the illustration is shown a nest which was made in the old nest of a small bird.

CARPENTER BEE. (Insects, 4.)

The Carpenter Bee is well known, but it should be noted that the yellow insect is the male and the black one with the yellow patch on the back the female. These bees go in pairs; the female gnaws out with her strong jaws a hole in wood, often in houses, in order to lay her eggs,

while the male waits for her on a branch outside. In the hole is put a store of pollen and honey for the food of the grubs.

SIKHIM HUMBLE-BEE. (Insects, 3.)

Humble-bees are large hairy bees, much like Carpenter bees, but more furry still; they are hill insects, and live in colonies in nests on the ground. They store up honey, which is made by the workers, and placed in round cells of wax. Wax is produced from little pockets underneath the bodies of the worker-bees, while the honey is the juice they gather from flowers.

LARGE JUNGLE BEE. (Insects, 1.)

The Large Jungle Bee is very similar in general appearance and habits to its smaller relation the tame bee, but besides being larger it makes its combs or collections of wax-cells to hold the honey in the open on branches; while the common bee, even when in the wild state, likes to have them under cover.

The large wild bee is a very fierce insect, and is dangerous to both man and beast when disturbed, by reason of its powerful sting.

RED TREE ANT. (Insects, 49.)

The Tree Ant is, if of the worker caste, of a rusty-red colour; worker ants of all kinds are without wings. The males are small, brown, hairy, and have wings. The

winged egg-laying females or queens are light green, much larger than the workers and males, and have wings. After they settle down again to found a new colony, on leaving the nest where they were reared, however, they break off their wings, this being the custom with the royal caste among ants.

The nest is made, as shown in the picture, of leaves fastened together while still on the tree. The fastening is of silk, which the grubs of the ants produce from their mouths. Like all silk, it is soft at first, and some workers hold the grubs in their jaws and make them give off their silk on the leaves, while others draw the leaves together.

The ants feed themselves and their grubs on dead insects and helpless ones like caterpillars. They lay up stores of dry insects in leaves webbed together, and also make shelters of leaves and web to protect mealy-bugs, on the sweet secretion of which they feed. They eject poison from the tail when disturbed.

BEETLES

The Beetles, scientifically known as Coleoptera or sheath-winged insects, are easily distinguished by having the front wings very hard and horny, so that they form a close-fitting case or shell for the back. Under these the hinder wings, which are used in flight, are doubled and folded so as to be completely hidden. Thus the beetles seem like wingless insects, and in fact they do not readily fly as a rule, except at night.

Their jaws are formed for biting, and they hatch from the egg as grubs, with six very short legs in front; these are usually whitish in colour, and feed concealed underground or in some substance in which they burrow. The pupa or chrysalis is much like the adult insect, but pale and with folded wings and helpless, as if asleep, as in the Hymenoptera. Beetles are very abundant, if not much seen, and often do a great deal of harm, chiefly in the grub stage; but in many cases the grubs are not known.

GREAT WHITE-SPOTTED GROUND-BEETLE. (Insects, 46.)

This is a well-known insect, living on the ground, and very useful, as it devours large quantities of other insects. It cannot fly, as it has only the horny front pair of wings. It is an insect of the plains, and sleeps in holes during the cold weather.

GIANT WATER-BEETLE. (Insects, 6.)

The Giant Water-beetle belongs to a family of beetles which live mostly in the water; they swim and dive actively with their flat curved hind legs, and sometimes fly from one pond to another at night, but they cannot move easily on land. Their antennæ are very short, and not easily noticed. They feed on various small water animals; the adults chew their prey, while the grubs have hollow jaws, and suck its blood through these.

LARGE EMERALD BEETLE. (Insects, 45.)

This beetle belongs to the family of beetles known as Buprestids; they are plant-feeders, and the grubs gnaw into trees. These grubs are of peculiar shape, with no legs, and very broad just behind the head, then narrower. The horny front wings are often used as ornaments on fabrics. The Large Emerald Beetle when alive looks like a toy insect made of metal.

EMERALD-AND-RUBY BEETLE. (Insects, 37.)

This is another Buprestid beetle, well known in the hills, and the richest-coloured of Indian insects, often sold by collectors.

TWIN-SPOTTED EMERALD BEETLE. (Insects, 18.)

The large Twin-spotted Beetle is also a Buprestid, and a hill insect caught for sale as an ornament.

SAW-JAWED BEETLE. (Insects, 57.)

This is a beetle of the eastern hill forests. Its grub is more than four inches long, with very minute legs.

GIANT LONGHORN BEETLE. (Insects, 38.)

The Longhorn Beetles are vegetable feeders; the grubs are like those of the Buprestids, but not so broad at the shoulders, and they also gnaw into trees, eating the wood. This beetle can produce a squeak by rubbing the edge of

the first joint of the thorax or chest against a file-like surface on the next. The species is found both in India and Burma.

COMMON LONGHORN BEETLE. (Insects, 60.)

This is better known than the giant species, and may be found even in Calcutta. Like the Giant Longhorn, it can produce a squeak. The long antennæ are curled round at the ends when the beetle is in the pupa stage, as if to save space.

GIANT LONG-ARMED WEEVIL. (Insects, 56.)

Weevils are beetles with the head generally long, narrow, and bent down in front, looking like an elephant's trunk, though not flexible. At the end of this snout the small jaws are placed. They are vegetable feeders, and the grubs are very destructive. The long snout with the jaws at the end is used for boring holes in which to lay the eggs.

YELLOW-BACKED STAG-BEETLE. (Insects, 47.)

Stag-beetles are remarkable for the large size of their jaws in the males, but the females, with their short jaws, can give a sharper pinch. Some males have small jaws like females. The Stag-beetles are vegetable feeders, and the grubs live in trees, eating the wood. The Yellow-backed Stag-beetle is found in Northern India.

BLACK STAG-BEETLE. (Insects, 30.)

As in the last species, it will be noticed that in this there is a great difference in size between the sexes. This is one of the hill species.

LONG-HORNED STAG-BEETLE. (Insects, 61.)

This species is even more remarkable for the length of its jaws than the last two, but the female's jaws are small, as in the others.

GIANT DUNG-BEETLE. (Insects, 25.)

Dung-beetles are noticeable for their broad shape and very powerful toothed front legs ; their hind legs are turned inwards, and with them they roll along backwards balls of dung, shovelled up with their broad heads, which balls they bury in the ground. They both feed on this substance themselves, and lay their eggs in it so that their grubs can do so. By this habit they manure the ground, and so are useful. They work by day. The Giant Dung-beetle can make a hoarse squeaking by a grinding motion of its hind legs.

TWO-SPOTTED CHAFER. (Insects, 58.)

Chafers are vegetable-feeding beetles, which feed on leaves or flowers, and their grubs, which are curved and very fat behind, live underground and devour roots. The ends of the antennæ are like little fans, being com-

posed of a number of narrow plates. The Two-spotted Chafer is an insect of the hill forests.

LEPIDOPTERA

The Scale-winged Insects, or Lepidoptera, are the Butterflies and Moths ; their wings are covered with tiny scales as fine as dust, so that the colour and pattern come off if they are carelessly touched ; their mouths in the adult are in the form of a trunk, for they only take liquid food, such as honey ; the trunk is coiled up when not in use. Their larvae are called caterpillars, and are often bright-coloured or hairy. Besides the six small legs in front, they have some sucker-feet. Those of moths are often destructive to plants, but butterfly caterpillars seldom destroy useful plants. The pupa is called a chrysalis, and is not only helpless, but has its limbs all glued, as it were, to its body, so it has little resemblance to the perfect insect. When the chrysalis skin splits and the creature comes out, the wings, as in most insects at this change, are very small and soft, but soon expand and harden.

Butterflies have the antennæ tipped with a knob, and hold their wings up together in repose ; in moths the antennæ are pointed, and the wings lie flat in repose. Moths generally fly by night, butterflies by day. It must be remembered, however, that the different groups of moths are as different from each other as any group of them is from the butterflies.

CHRYSIPPUS BUTTERFLY. (Insects, 33.)

This is one of the Danaid butterflies, which are very tough, and not much liked by birds; the Chrysippus is the most familiar of Indian butterflies, being found everywhere. The caterpillar is blue-grey, with yellow and black markings, and six black fleshy threads, two in front and four behind. It feeds much on madar. The chrysalis is green or pink, spotted with gold, and is hung up by the tail.

GREEN-SPOTTED DANAIS. (Insects, 32.)

This is also a very common Danaid butterfly; the caterpillar feeds on the same plants as the last, but is white in ground-colour, with only two threads behind. The chrysalis is green, spotted with gold.

COMMON EUPLOEA. (Insects, 8.)

This butterfly is also one of the Danaid group, and very common. Its caterpillar feeds much on oleander and figs, and is pale purple, marked with brown and yellow, with four pairs of threads. The chrysalis is yellowish brown, marked with silver and gold.

RICE BUTTERFLY. (Insects, 48.)

The Rice Butterfly is one of the few that are destructive; its caterpillar, shown, with the chrysalis, in the picture, feeds upon rice and grass. This insect is very different

from the Danaids, being fragile-winged, and coloured for concealment from foes.

ELYMNIAS BUTTERFLY. (Insects, 40.)

This is also a fragile butterfly, well concealed with the wings closed. Only the male is shown, the female being coloured rather like the Chrysippus, and possibly mistaken for it by birds; the caterpillar and chrysalis are green, streaked with yellow; the caterpillar feeds on palm leaves.

EUDAMIPPUS BUTTERFLY. (Insects, 19.)

The Eudamippus is one of a strong, active-flying group, very different from the lazy Danaids and fragile Elymnias. It is found from Sikhim to Tenasserim.

INDIAN ADMIRAL BUTTERFLY. (Insects, 14.)

This is a hill species, but sometimes comes down to the plains. The caterpillar is black and prickly, and feeds on nettles.

BOLINA BUTTERFLY. (Insects, 26.)

This common butterfly shows a great difference in the sexes; the male only has the large blue-and-white spots, while the female is coloured very like the tough and rather nasty Euploea, thus no doubt often escaping enemies. The caterpillar is brown and prickly, and feeds on nettles; the chrysalis is also brown.

LEAF BUTTERFLY. (Insects, 50.)

The Leaf Butterfly is so called because it is coloured underneath like a dead leaf, and, the wings being also leaf-like in shape, it may easily be mistaken for a dead leaf when in repose with wings folded. It is a hill insect, but does not go high up. The caterpillar is black, with yellowish hair and reddish spines, and feeds on *Girardinia*, *Polygonum*, and *Strobilanthes* plants. The chrysalis is buff.

INDIAN SILVER-WASHED FRITILLARY. (Insects, 7.)

This is a butterfly of the north Indian and Burmese hills, remarkable for the silver markings on the underside. In all the butterflies dealt with up to now, the chrysalis is suspended by the tail from a plant.

IMPERIAL SWALLOW-TAIL BUTTERFLY. (Insects, 31.)

This butterfly lives high up in the hills from Sikhim to Burma. The specimen in the picture is a female ; the male is much smaller and greener. The caterpillar is believed to feed on the plant *Daphne nepalensis*.

HECTOR SWALLOW-TAIL BUTTERFLY. (Insects, 20.)

The Hector is found from Bengal to Chittagong and Ceylon. It is much disliked by birds. The caterpillar

is dark brown, with many crimson warts, and feeds on the *Aristolochia* plant. The chrysalis is purplish-buff, and not only hung up by the tail, but by a band of silk round the body, as usual in chrysalises of butterflies of the swallow-tail group.

DOUBLEDAY'S SWALLOW-TAIL BUTTERFLY. (Insects, 13.)

This Swallow-tail, remarkable for its musky scent, is found from Cachar to Burma. The eastern specimens have redder bodies.

DEMOLEUS BUTTERFLY. (Insects, 42.)

Although without tails to the wings, this is one of the Swallow-tail group. It is found all over India and Upper Burma. The caterpillar is at first brown and white, and looks like birds' dung; then it becomes mostly green. It feeds mostly on the leaves of bael, lime, orange, and pumelo, and so may do harm. The chrysalis matches its surroundings, being either green or brown.

POLYTES SWALLOW-TAIL BUTTERFLY. (Insects, 21.)

The Polytes Swallow-tail is found nearly all over the Indian Empire; the specimen in the picture is a male, and some of the females resemble him, but others are very like the red-bodied Swallow-tails, such as Hector, and no

doubt often escape the birds, which will eat the ordinary Polytes.

The caterpillar and chrysalis are like those of the Demoleus, though they are larger; the caterpillar feeds on the same kind of plants.

PARIS SWALLOW-TAIL BUTTERFLY.
(Insects, 12.)

The Paris Swallow-tail is a hill insect, but does not go high up the hills. The female lays her eggs on the plant *Evodia roxburghiana.*

RED-BORDERED WHITE BUTTERFLY.
(Insects, 41.)

This butterfly is more beautiful below than above; the underside of the hind-wings is yellow, edged with red. It is common in the plains of India and in Ceylon, and goes some distance up the hills, but is not found in Burma. The caterpillar is brown, with white hairs upon it; it feeds on mistletoe. The chrysalis is yellow, with raised black spots. It is fastened up by a belt round the body as well as by the tail, like the chrysalises of the Swallow-tails.

CABBAGE BUTTERFLY. (Insects, 39.)

The Cabbage Butterfly is found in the Himalayas and the country near them down to Umballa; the caterpillar is green, marked with yellow and black, and very destructive to cabbages. The chrysalis is pale green, spotted with

black, and is hung up lengthways by the tail and a silk belt, under some shelter.

The Silk-moths are remarkable for having no trunk, and thus being able to take no food. They only live a few days. The caterpillars spin a cocoon or case of silk in which to pass into the chrysalis state. Moth chrysalises are usually brown, and are not hung up like those of butterflies.

MOON MOTH. (Insects, 43.)

The Moon Moth is found in India, Ceylon, and Burma, chiefly in the hills. Its caterpillar is green, with yellow warts and hairs. It feeds on *Odina Wodier*, and makes a brown cocoon enclosed in leaves.

ATLAS MOTH. (Insects, 34.)

The Atlas Moth is the largest in expanse of all known insects. Although widely spread in the Empire, it is chiefly a hill-forest insect. It is remarkable for the clear spot in each wing, a patch of membrane without scales. The caterpillar is pale green, speckled with brown, and has long soft bluish-green spines. It feeds on the leaves of various trees, and hangs its cocoon from them.

ERI SILK-MOTH. (Insects, 16.)

This Silk-moth is found in the Himalayas and Assam; it has the same clear wing-patches as the Atlas. The caterpillars are green or white, and the silk of their cocoons

is the Eri or Arrundi silk ; it may be either white or dull red. It is kept in a tame state.

TUSSER SILK MOTH. (Insects, 35.)

The Tusser Silk-moth is found widely in India and in Ceylon ; the male is smaller and browner than the female, and both have round, clear, scaleless spots. The caterpillar is green, with gold or silver spots ; it feeds on many trees and bushes, especially asan, urpin, sal, and ber. Its cocoon supplies the very durable Tusser silk, and is often hung by a stalk. The moth is not kept permanently, but much of the silk is from cocoons collected in the jungle. Some cocoons are kept, and the eggs are laid by female moths put on trees.

The Hawk-moths are very different from the weak Silk-moths. They have well-developed trunks, and feed freely, and fly strongly and swiftly, whence they are compared to hawks. The caterpillars are smooth, and they change into chrysalises in the ground, making no cocoon.

INDIAN DEATH'S-HEAD MOTH. (Insects, 28.)

The Death's Head is one of the Hawk-moths that is best known, being widely spread in the plains, while there is a very similar kind in the hills. It gets its name from the figure of a skull on its shoulders, and it is also remarkable for being able to squeak. The caterpillar is green, streaked with yellow, and has a horn on the tail. It is as big as a man's finger, and does some harm by feeding on til.

CONVOLVULUS HAWK-MOTH. (Insects, 27.)

This is the most familiar of the Hawk-moths, and may be seen visiting white flowers at night, thrusting its long trunk into them while hovering on the wing; it is a most powerful flyer. The caterpillar is green, with pink streaks and a yellow horn on the tail. It feeds not only on convolvulus, but on sweet potato and on urid.

BLOOD-STREAKED MOTH. (Insects, 29.)

This is one of the family of Burnets, very beautifully-coloured moths which fly by day; their chrysalises are enclosed in a silken cocoon. The Blood-streaked Moth is found in the hills from Sikhim to Burma.

ERASMIA MOTH. (Insects, 15.)

This is another hill moth of the same family, ranging from Sikhim to Sylhet; it is the most brilliant of Indian moths, and just as bright below as above, a very rare case among these insects. The green in the actual insect has a shining appearance, as in the peacock's feathers.

INDIAN WOOD-LEOPARD MOTH. (Insects, 24.)

The Wood-leopard belongs to a very distinct family of moths, in which the caterpillars eat into living trees like some beetle-grubs. The female of the species, which is shown in the picture, is much larger than the male; it is found in the hills from Dharmsala to the Nagas.

PERICALLIA MOTH. (Insects, 9.)

This is one of the Tiger-moths, a family remarkable for their bright colours and the hairiness of the caterpillars. It is found in the hills, extending to the Nagas.

EUSEMIA MOTH. (Insects, 22.)

This is a representative of another family of bright-coloured moths, but unlike the Tiger-moths, they fly by day, and have well-developed trunks; and they are only slightly hairy in the caterpillar stage. It is found in the Eastern Himalayas and Burma.

NIGHT-PEACOCK MOTH. (Insects, 10.)

The Night-peacock Moth is one of the great family of Noctuid moths, which are generally stout-bodied, dull-coloured, and night-flyers, with well-developed trunks, and fond of sweets. Their caterpillars are generally smooth. The Night-peacock is found throughout the Indian Empire.

LEAF-WINGED MOTH. (Insects, 52.)

This is another of the Noctuid moths. It is beautifully coloured to resemble a leaf in repose, as then the leaf-like front wings would be drawn down by the sides and over the hind ones. It is found in Sikhim and the Khasi Hills.

BROWN SWALLOW-TAIL MOTH. (Insects, 51.)

The Brown Swallow-tail Moth belongs to the Uraniid family of moths, which look very like butterflies, and fly by day. It is found from Sylhet to Burma, and the caterpillar is black-and-white.

EUSCHEMA MOTH. (Insects, 23.)

This is one of the family of Geometer Moths, whose caterpillars are called Loopers, from the way in which they loop their body in walking, bringing the tail up to the head. These moths also look much like butterflies, but generally rest with all their wings spread out flat. Most are dull coloured, but some very handsome, like this Euschema Moth, which is found from Sikhim to Burma.

BUGS.

The Bugs, which are known scientifically as Rhynchota or beaked insects, have the mouth in the form of a long beak, with which they suck up the juices of plants or the blood of insects and other animals. They are well known in the form of the common house-bug. This has no wings, but bugs generally have two pairs of wings, the hind pair membranous and clear, and the front pair leathery for the most part, but soft at the tip. Bugs are hatched in a form resembling the adult, and only change at the last moult, when they get their wings.

GIANT RED PLANT BUG. (Insects, 11.)

This is found in Bengal and Assam, and is to be seen on bhindi and cotton plants, sometimes in very large numbers. The insect in the picture is a male; in the female the antennæ and body are much shorter.

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